

Inv energy

December 10, 2004

Honorable Kathleen Sheehy
Administrative Law Judge
Office of Administrative Hearings
100 Washington Square, Suite 1700
Minneapolis, MN 55401

Re: Site Permit for Large Electric Generating Plant
EQB Docket No. 04-85-PPS-Cannon Falls EC
OAH Docket No. 3-2901-16230-2

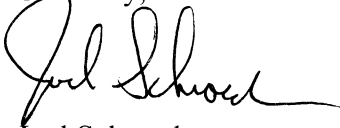
Dear Judge Sheehy:

In response to questions raised at the December 1, 2004 hearing, Invenergy Cannon Falls LLC would like to submit additional information addressing some of the public's questions into the record. We identified several permitting issues which appeared to concern several attendees at the hearing and prepared written responses to those issues to be posted on the Office of Administrative Hearings website and the Environmental Quality Board's website.

Responses were prepared in consultation with and reviewed by Invenergy's environmental consulting firm URS and their Senior Atmospheric Scientist Steve Frey and Project Meteorologist James DiCola.

We hope our responses are helpful to you in preparing your report and recommendation.

Sincerely,



Joel Schroeder

cc: Bill Storm – Environmental Quality Board
Jim Bertrand – Leonard, Street & Deinard
Julie Spapperi – URS Corporation

Concern: Will the Cannon Falls Energy Center create odors?

Response: The Cannon Falls Energy Center will not create any additional odors. The combustion of natural gas or No. 2 low sulfur fuel oil does not create any odors.

Concern: How are the air quality standards set?

Response: The Clean Air Act directs EPA to identify and set National Ambient Air Quality Standards (NAAQS) for air pollutants that may cause adverse effects to public health and the environment. EPA has set national air quality standards for six common air pollutants – ground-level ozone, carbon monoxide, lead, nitrogen dioxide, sulfur dioxide and particulate matter (measured as PM₁₀ and PM_{2.5}).

The Clean Air Act established two types of NAAQS. “Primary” standards are designed to establish limits to protect public health, including the health of “sensitive” populations such as asthmatics, children and the elderly. “Secondary” standards set limits to protect public welfare, including protection against decreased visibility and damage to animals, crops, vegetation and buildings. In order to maintain continued protection of the public health and the environment, EPA is required by the Clean Air Act to review the health and welfare-based standards at least once every five years to determine whether revisions to the standards are necessary.

EPA undertakes an extensive scientific and technical assessment process during the standard review for any air pollutant. EPA prepares a “criteria document” which is an extensive assessment of scientific data pertaining to the health and environmental effects associated with the air pollutant under review. EPA then prepares a “staff paper” that interprets the most relevant information in the “criteria document” and identifies 1) factors EPA staff believes should be considered in the standard review; 2) uncertainties in the scientific data; and 3) ranges of alternative standards the staff believes should be considered. The “staff paper” is ultimately used as the basis for staff recommendations to the EPA Administrator.

Drafts of both the “criteria document” and the “staff paper”, which are based on thousands of peer-reviewed scientific studies, receive extensive review by representatives of the scientific community, industry, public interest groups and the public, as well as the Clean Air Scientific Advisory Committee (CASAC) – a congressionally mandated group of independent scientific and technical experts. As part of its mandate, CASAC also makes recommendations to EPA on the adequacy of the standards. Based on the scientific assessments and taking into account the recommendations of CASAC, the EPA Administrator must judge whether or not proposing revisions to the standards is appropriate.

Before making a decision, the EPA Administrator goes through an extensive public review and comment process. EPA reviews and extensively analyzes issues raised in public comments before announcing a final decision. As with every proposed and final

rule, all other relevant state and federal agencies are given the opportunity to participate in the process.

A margin of safety is incorporated in the value of each NAAQS. Based on scientific research, EPA defines the concentration exposure level where no adverse health effect is anticipated to occur. A safety factor is then incorporated, resulting in a lower concentration level.

Concern: What are the National Ambient Air Quality Standards (NAAQS) for the air pollutants?

Response: The proposed combustion turbines will primarily fire natural gas with low sulfur distillate fuel oil being available as a backup fuel. The combustion of natural gas or distillate fuel oil results in the formation of air pollutants such as oxides of nitrogen (NO_x), carbon monoxide (CO), particulate matter less than 10 microns in size (PM_{10}), sulfur dioxide (SO_2) and volatile organic compounds (VOCs).

NO_x reacts with the atmosphere to form nitrogen dioxide (NO_2). Scientists have set an outdoor exposure limit (NAAQS) of 100 ug/m^3 over a 1-year period (annual average).

CO is a colorless and odorless gas. Scientists have set an outdoor exposure limit (NAAQS) of $40,000 \text{ ug/m}^3$ for any 1-hour period (1-hour average) and $10,000 \text{ ug/m}^3$ for any 8-hour period (8-hour average).

PM_{10} consists of ash, soot, smoke and dust. Scientists have set an outdoor exposure limit (NAAQS) of 150 ug/m^3 for any 24-hour period (24-hour average) and 50 ug/m^3 for a 1-year period (annual average).

SO_2 is a colorless gas. Scientists have set an outdoor exposure limit (NAAQS) of $1,300 \text{ ug/m}^3$ for any 3-hour period (3-hour average), 365 ug/m^3 for any 24-hour period (24-hour average) and 80 ug/m^3 over a 1-year period (annual average).

VOCs react with sunlight and atmospheric conditions to form ozone. Ozone (O_3) is a photochemical oxidant and the major component of smog. Scientists have set an outdoor exposure limit (NAAQS) of 80 ppb (parts per billion) for any 8-hour period (8-hour average).

Concern: What factors are considered when permitting a plant such as the Cannon Falls Energy Center? Was an air model prepared?

Response: State and federal air regulations require preparation and submittal of construction permit applications to the state agency for evaluation prior to the operation of any new emission source. The agency reviews the application to determine whether or not the proposed emission source will comply with state and federal air regulations as well as to make sure the ambient air quality standards will be met. A permit allowing the construction and operation of the source is issued by the agency if the agency reviews

and approves the application. The methodology used for determining the potential impact of the source on ambient air quality must be approved by the regulatory agency(s). The air quality impact assessment is performed using air quality models approved by EPA. A model is a mathematical tool for conservatively predicting the impacts of air pollutants from industrial sources on ambient air quality. The EPA approved model employed for the Cannon Falls Energy Center project is called the Industrial Source Complex Short Term (ISCST) dispersion model. This model is run on a computer and has been employed by the regulatory community for 20 years. It is designed to simulate the impacts from stacks and fugitive sources. The model requires inputs such as stack characteristics, building dimensions, hourly meteorological data, surrounding terrain, and hourly air pollutant emission rates based on worst case operating conditions (conditions that are likely to create the maximum ground level concentrations). The model is designed to calculate conservative concentrations at user defined impact points, referred to as receptors. The proposed Cannon Falls Energy Center's emission sources were modeled with the incorporation of terrain elevations at all receptor locations. The receptor network consisted of 2,630 receptor points extending to five kilometers from the project site. The receptor spacing used for the analysis is based upon recommendations provided by the MPCA Air Dispersion Modeling Guidance Table 5.

The ISCST dispersion model is a steady-state tool for assessing air pollutant concentrations from a wide variety of industrial sources. The ISCST dispersion model is a refined modeling tool that provides a more accurate estimate of a source's impact. The ISCST model uses complicated scientific algorithms to estimate air pollutant amounts in the air that we could breathe. These amounts (concentrations) are expressed in micrograms of a particular pollutant of concern per cubic meter of air.

Concern: What were the results of the air model? Were all ambient air quality standards met?

Response: All predicted impact levels were well below the respective NAAQS.

The worst case incremental impact was calculated and reported in the air permit application submitted to the Minnesota Pollution Control Agency. The attached figures present the predicted (modeled) impacts from emissions attributable to the proposed project, the existing background concentration levels, and the NAAQS for NO₂, CO, PM₁₀ and SO₂ as reported in the air permit application and in additional information that Invenenergy has submitted to the MPCA since submission of the air permit application. As shown in these figures, predicted concentrations are well below the pollutant-specific NAAQS limits, which have been established by EPA to protect human health and welfare. The predicted concentrations are based upon the worst case operation of the proposed facility's emission sources.

Concern: How was the background air quality for Cannon Falls area determined?

Response: The Minnesota Pollution Control Agency provides guidance and instructs applicants on the proper number to use as the background ambient quality. The MPCA publishes the document “MPCA Air dispersion modeling Guidance for Minnesota Title V Modeling Requirements and Federal Prevention of Significant Deterioration (PSD) Requirements.” In this document, the MPCA provides the values to be used as background numbers for the purpose of air emission modeling and all of the guidelines which need to be followed to run a proper air emissions model. The document can be found on the MPCA’s website at the web address: www.pca.state.mn.us/publications/modeling-title5.pdf. The background values are found in Table 6 on page 26.

In the case of the Cannon Falls Energy Center, the facility location falls outside of Minneapolis, St. Paul and the greater Twin Cities metropolitan areas. Cannon Falls is included in the category titled rest of Minnesota. Some concern was expressed in the hearing that the background emission levels used in modeling may not be representative of the levels in the Cannon Falls Area. Even if the worst case background emission levels for the entire state of Minnesota in Table 6 were used, the ambient air quality standards would still be met when the incremental contribution of the Cannon Falls Energy Center is added to the ambient air background concentrations.

Concern: Do the ambient conditions measured at the Minneapolis Airport accurately reflect those experienced in Cannon Falls?

Response: It is acknowledged that the City of Cannon Falls resides in the Cannon Valley; however, the terrain surrounding Cannon Falls should not significantly impact atmospheric conditions. The MPCA approved the use of the 1987 through 1991 Minneapolis/St. Paul International Airport meteorological data for dispersion modeling purposes for this part of the state. This meteorological data has been determined by the MPCA to be representative of the meteorological conditions that would occur in the Cannon Falls area. The receptor network used in the dispersion modeling analysis which was performed in support of the Cannon Falls Energy Center’s air permit application, took into account the variation in topography. The air dispersion modeling methodology submitted as part of the Cannon Fall Energy Center’s air permit application was agreed upon with the MPCA prior to submission of the air permit application.

Concern: Will future development near Cannon Falls take into account the Cannon Falls Energy Center?

Response: If a new proposed major emissions source were to prepare an application to site a location near Cannon Falls, the developer would be required to prepare a predictive emission model which would include the emissions from Cannon Falls. The developer would work with the MPCA to develop a model which accurately reflected the scenario in Cannon Falls. The MPCA will not issue a construction air permit to any source which would compromise the minimum ambient air quality standards as defined by the EPA.

Concern: Won’t this be similar to the Pine Bend Refinery?

Response: The two plants could not be more different. The Pine Bend Refinery is in the business of refining crude oil into gasoline, diesel, jet fuel, and other petroleum products. The odors and air emissions resulting from the Pine Bend Refinery result from processing crude oil and its by-products on a massive scale. The Cannon Falls Energy Center is a clean burning, natural gas fired electric generation facility with fuel oil as a backup.

Concern: What are the existing noise conditions?

Response: In September of 2004, Invenergy Cannon Falls conducted an ambient noise level survey to establish baseline ambient noise levels (L_{90}) in the area surrounding the proposed facility. The L_{90} measurement is the sound level exceeded 90% of the time and represents the environment at its quietest periods. The noise surrounding the facility was generally in the range of 43 to 51 dBA during the daytime hours and in the 29 to 40 dBA range during the nighttime hours. Predominant noise sources during daytime hours included: traffic on Highway 29, Highway 20, Holiday Avenue, and Cannon Industrial Boulevard; insect noise; wind induced vegetation rustle; aircraft flyovers; and nearby commercial activities. Predominant noise sources during nighttime hours again included: traffic on Highway 29 and Highway 20; insect noise; insect noise; wind induced vegetation rustle; aircraft flyovers; and nearby commercial activities.

Minnesota Rules 7030.0040 has established limitations on sound levels on the basis of present knowledge for the preservation of public health and welfare. The standards limit the L_{50} (the sound level exceeded 50% of the time or median sound level) residential noise levels to less than 50 dBA during the nighttime and 60 dBA during the daytime, with limits in industrial areas being slightly higher. Invenergy conducted a noise survey which predicted (with 3 dBA of margin included) that noise impacts will be less than 50 dBA at all surrounding residential noise receptors while the plant operates at full output. Considering the peaking nature of the facility and the limited amount of expected operation, the noise emissions of the plant will be reduced from the maximum predicted levels for the majority of hours in any given year. Most of the plant's operation will likely be during hot summer afternoons when the electrical demand in Minnesota is the greatest.

Concern: What is the experience of the Invenergy with developing, owning, and operating power generation facilities such as the one in Cannon Falls?

Response: Invenergy currently owns and operates a combustion turbine facility in Hardee County, Florida. Additionally, Invenergy recently completed construction on a wind turbine facility near Oak Ridge, Tennessee called the Buffalo Mountain Energy Center. Although the company is relatively new (founded in 2001), the Invenergy staff is made up of professionals with many years of energy-related experience. Many have worked together previously at SkyGen Energy and at Calpine after Calpine acquired SkyGen. While at SkyGen and Calpine, Invenergy personnel were responsible for many facilities including the development and construction of 5 similar peaking plants totaling

over 2,300 MW of electrical generation at facilities located in Wisconsin, Illinois, South Carolina, and Colorado.

How will it affect air quality in the vicinity of the Invenergy site?

THE PROPOSED PROJECT WILL NOT CAUSE OR CONTRIBUTE TO A VIOLATION OF THE AMBIENT AIR QUALITY STANDARDS FOR NITROGEN DIOXIDE (ANNUAL AVERAGE)

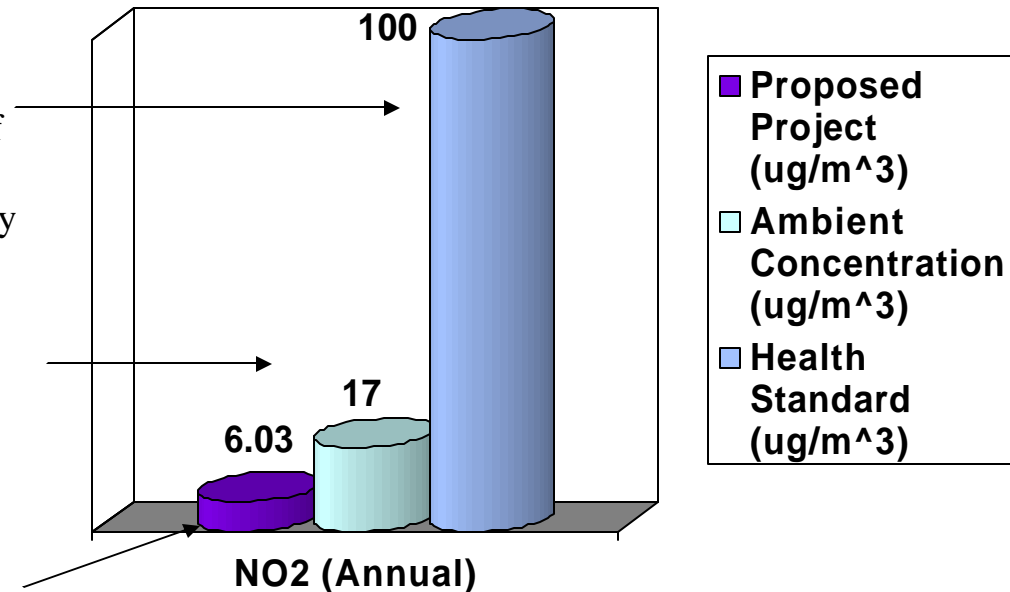
EPA's National Ambient Air Quality Standard

Acceptable level which allows an adequate margin of safety to protect public health and the environment from adverse effects of air pollutants as established by the United States Environmental Protection Agency

Background Level

Maximum Predicted Impact of the Invenergy Project

Based on using EPA's air dispersion computer model.



How will it affect air quality in the vicinity of the Invenergy site?

THE PROPOSED PROJECT WILL NOT CAUSE OR CONTRIBUTE TO A VIOLATION OF THE AMBIENT AIR QUALITY STANDARDS FOR CARBON MONOXIDE (1-HOUR)

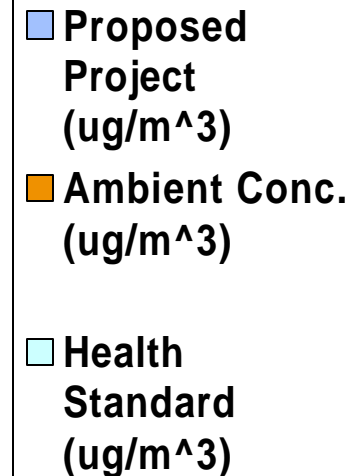
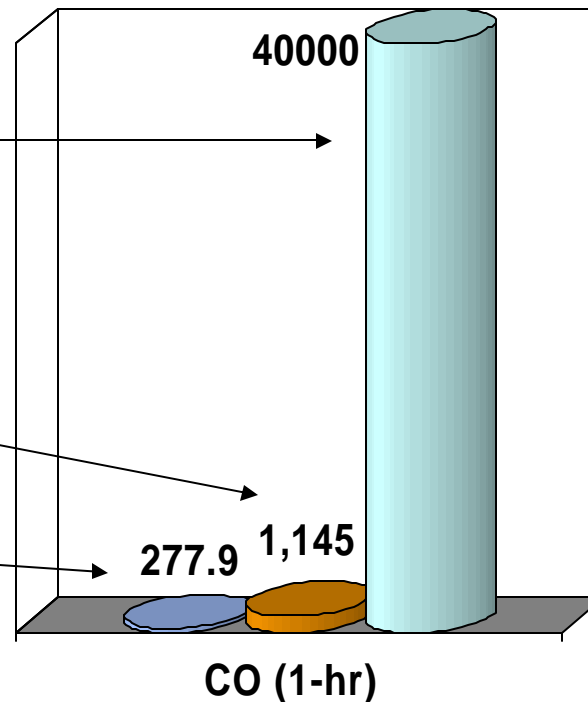
EPA's National Ambient Air Quality Standards

Acceptable level which allows an adequate margin of safety to protect public health and the environment from adverse effects of air pollutants as established by the United States Environmental Protection Agency

Background Concentration

Maximum Predicted Impact of the Invenergy Project

Based on using EPA's air dispersion computer model.



How will it affect air quality in the vicinity of the Invenergy site?

THE PROPOSED PROJECT WILL NOT CAUSE OR CONTRIBUTE TO A VIOLATION OF THE AMBIENT AIR QUALITY STANDARDS FOR CARBON MONOXIDE (8-HOUR)

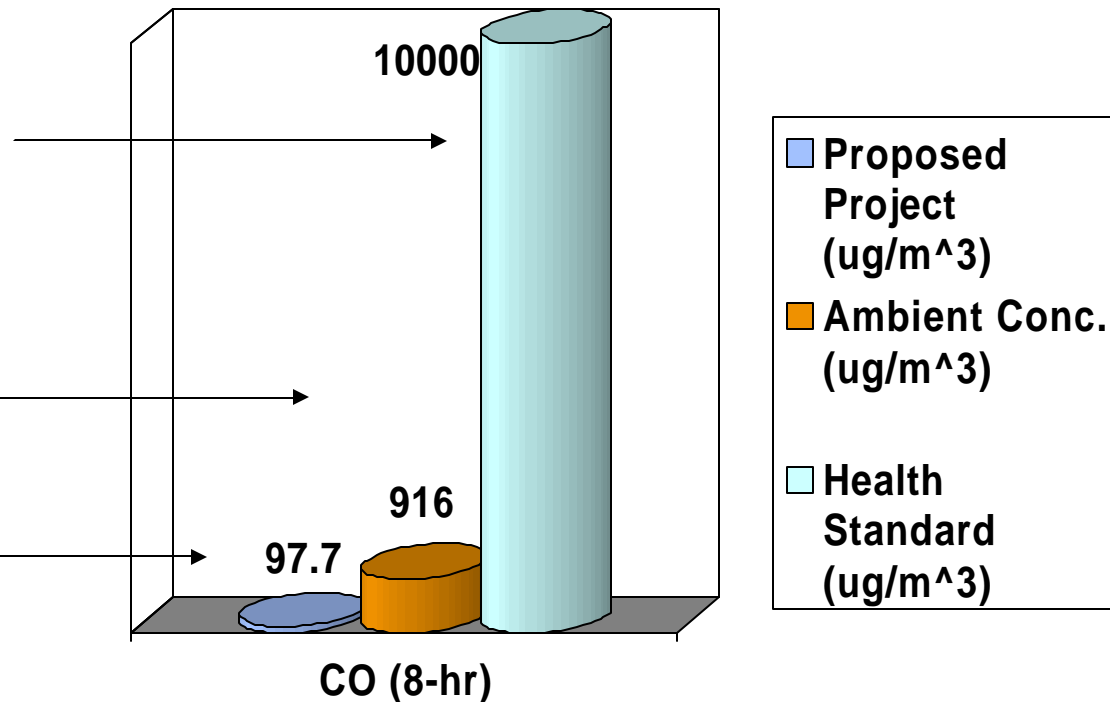
EPA's National Ambient Air Quality Standards

Acceptable level which allows an adequate margin of safety to protect public health and the environment from adverse effects of air pollutants as established by the United States Environmental Protection Agency

Background Concentration

Maximum Predicted Impact of the Invenergy Project

Based on using EPA's air dispersion computer model.



How will it affect air quality in the vicinity of the Invenergy site?

THE PROPOSED PROJECT WILL NOT CAUSE OR CONTRIBUTE TO A VIOLATION OF THE AMBIENT AIR QUALITY STANDARDS FOR PM₁₀ (Annual)

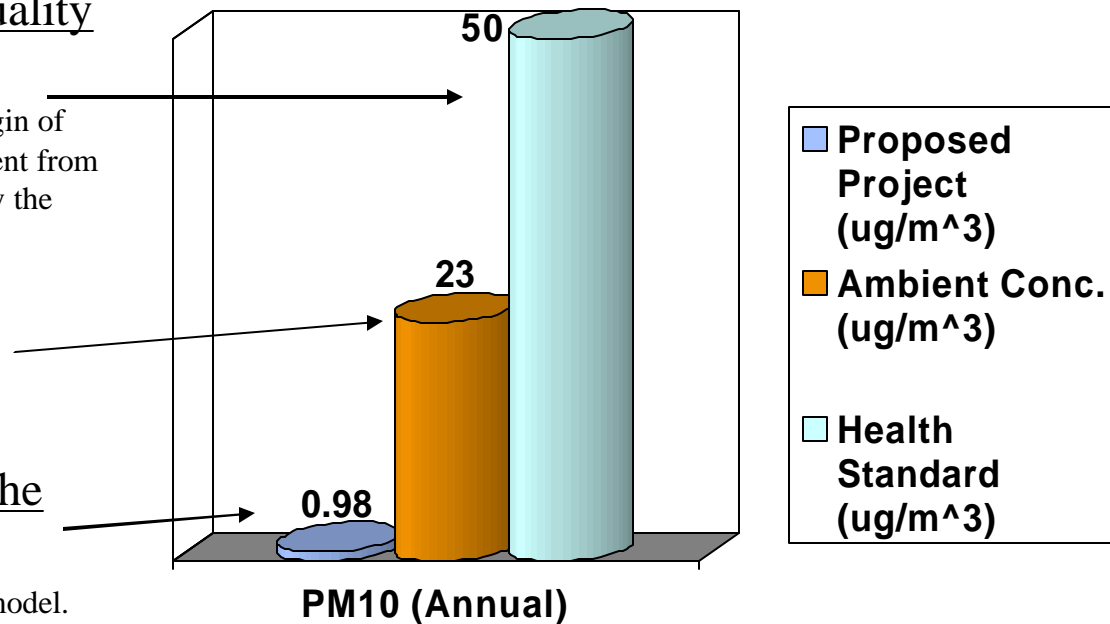
EPA's National Ambient Air Quality Standards

Acceptable level which allows an adequate margin of safety to protect public health and the environment from adverse effects of air pollutants as established by the United States Environmental Protection Agency

Background Concentration

Maximum Predicted Impact of the Invenergy Project

Based on using EPA's air dispersion computer model.



How will it affect air quality in the vicinity of the Invenergy site?

THE PROPOSED PROJECT WILL NOT CAUSE OR CONTRIBUTE TO A VIOLATION OF THE AMBIENT AIR QUALITY STANDARDS FOR PM₁₀ (24-HOUR)

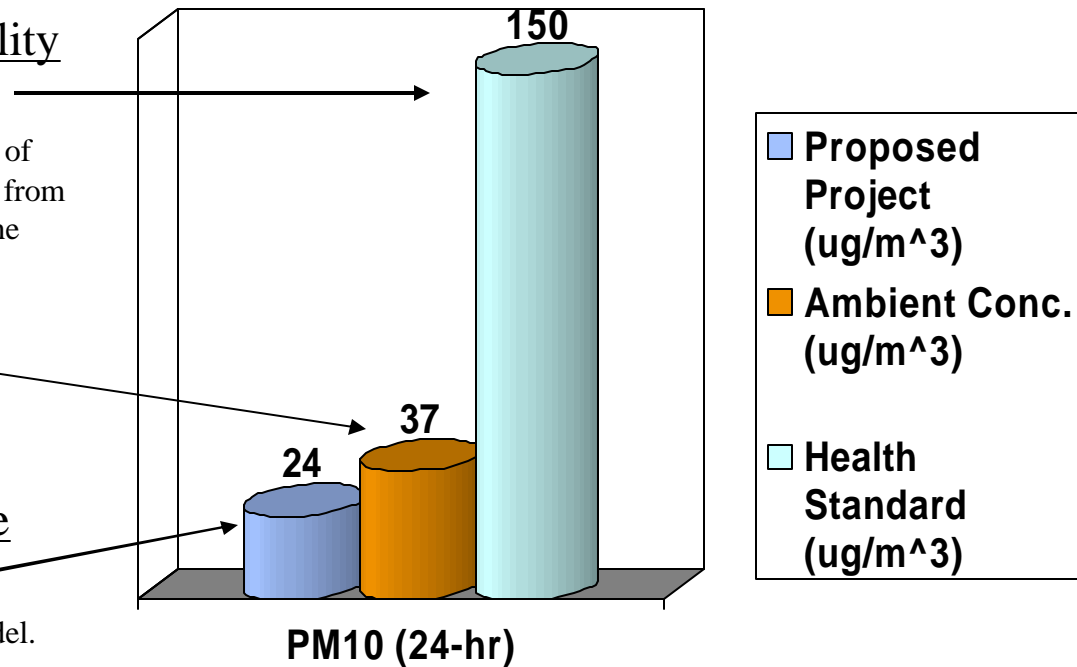
EPA's National Ambient Air Quality Standards

Acceptable level which allows an adequate margin of safety to protect public health and the environment from adverse effects of air pollutants as established by the United States Environmental Protection Agency

Background Concentration

Maximum Predicted Impact of the Invenergy Project

Based on using EPA's air dispersion computer model.



How will it affect air quality in the vicinity of the Invenergy site?

THE PROPOSED PROJECT WILL NOT CAUSE OR CONTRIBUTE TO A VIOLATION OF THE AMBIENT AIR QUALITY STANDARDS FOR SO₂ (Annual)

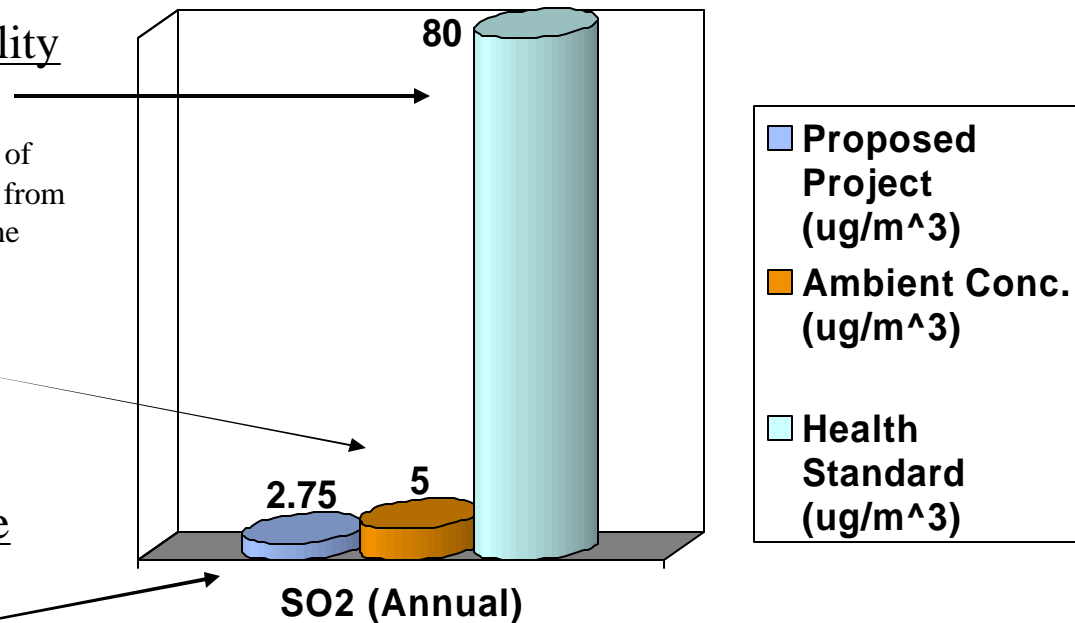
EPA's National Ambient Air Quality Standards

Acceptable level which allows an adequate margin of safety to protect public health and the environment from adverse effects of air pollutants as established by the United States Environmental Protection Agency

Background Concentration

Maximum Predicted Impact of the Invenergy Project

Based on using EPA's air dispersion computer model.



How will it affect air quality in the vicinity of the Invenergy site?

THE PROPOSED PROJECT WILL NOT CAUSE OR CONTRIBUTE TO A VIOLATION OF THE AMBIENT AIR QUALITY STANDARDS FOR SO₂ (3-Hour)

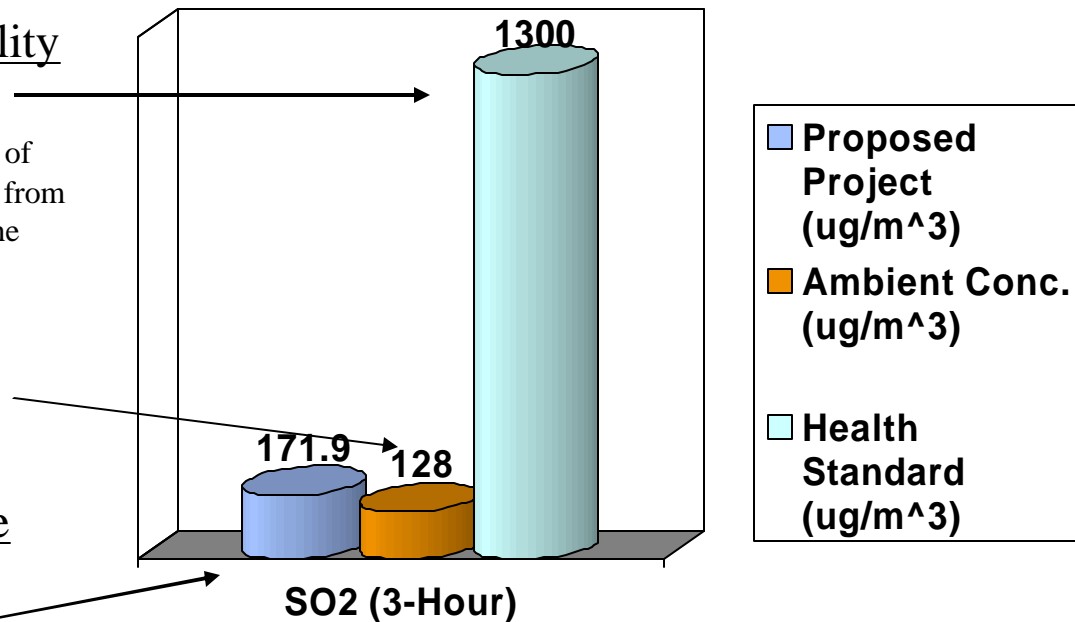
EPA's National Ambient Air Quality Standards

Acceptable level which allows an adequate margin of safety to protect public health and the environment from adverse effects of air pollutants as established by the United States Environmental Protection Agency

Background Concentration

Maximum Predicted Impact of the Invenergy Project

Based on using EPA's air dispersion computer model.



How will it affect air quality in the vicinity of the Invenergy site?

THE PROPOSED PROJECT WILL NOT CAUSE OR CONTRIBUTE TO A VIOLATION OF THE AMBIENT AIR QUALITY STANDARDS FOR SO₂ (24-Hour)

EPA's National Ambient Air Quality Standards

Acceptable level which allows an adequate margin of safety to protect public health and the environment from adverse effects of air pollutants as established by the United States Environmental Protection Agency

Background Concentration

Maximum Predicted Impact of the Invenergy Project

Based on using EPA's air dispersion computer model.

